

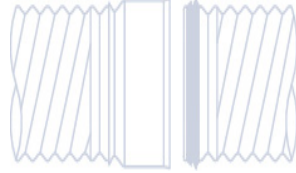
# ***CMP Innovation***

## Midwestern Hydraulic Engineering Conference

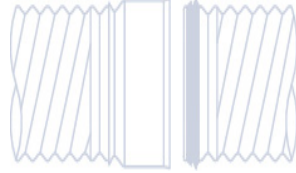
Jeffrey M. Gilkinson, PE

Manager, Corrugated Metal Products

CONTECH Construction Products Inc.



The job of a Hydraulic Engineer  
is more challenging today than  
any time in history...



**How many project sites today look like this?**



- Unobstructed
- Easy to access
- Easily defined drainage area



**This is more typical...**

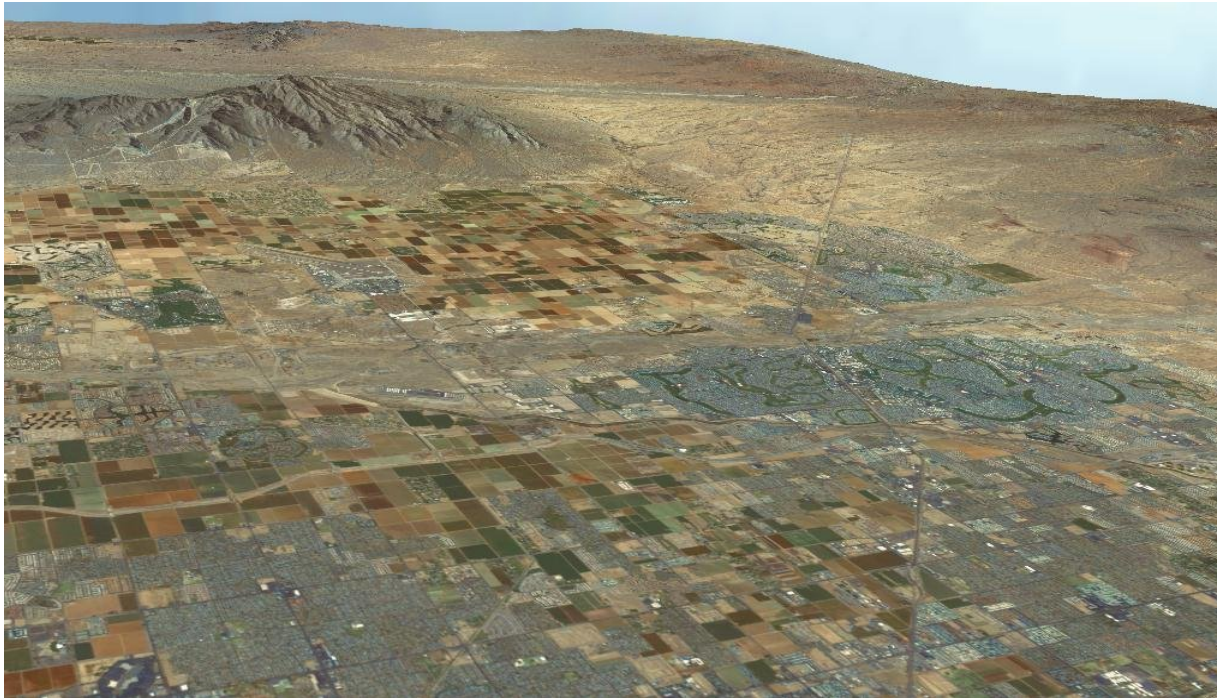


- Sprawling development
- Expanding infrastructure

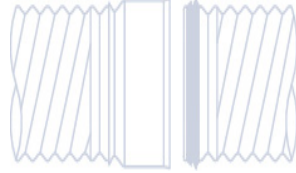




## **Rapid urbanization...**



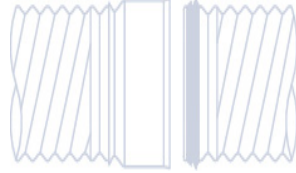
- Concentrated impervious areas
- Highly sub-divided drainage areas



**The role of a Hydraulics Engineer is changing...**



**...from designing drainage infrastructure, to designing drainage infrastructure that can handle increased volumes of storm water within constrained areas.**



**The challenge extends beyond design issues...**

**Other considerations include:**

Product Capabilities:

- Constructability
- Ability to be incorporated into existing system
- Service life



**There are many suitable drainage conduits available for today's complex construction**



**But...**

- Not every product is suitable for every application
- Some products offer distinct advantages in the most difficult and challenging applications

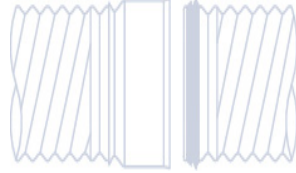




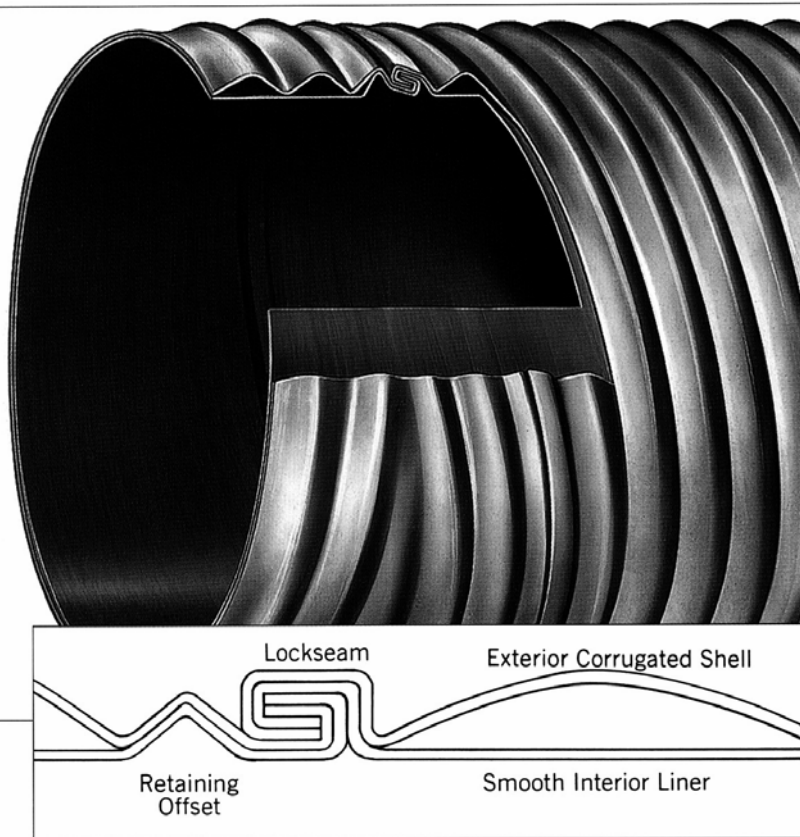
# **POLYMER SMOOTH-COR**



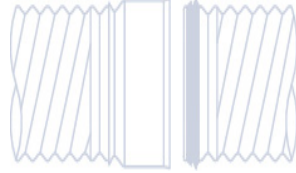
- **18" – 126"**
- **"n" = .012**
- **100 Year Service Life**



# POLYMER SMOOTH-COR



- **CSP Exterior**
- **Smooth Steel Lining**
- **Polymer Coated**
- **Pipe & Pipe-Arch**
- **AASHTO Type 1A**
- **DOT acceptance**



# **POLYMER**

## **TRENCHCOAT\* Protective Film**





# POLYMER



**TRENCHCOAT offers excellent:**

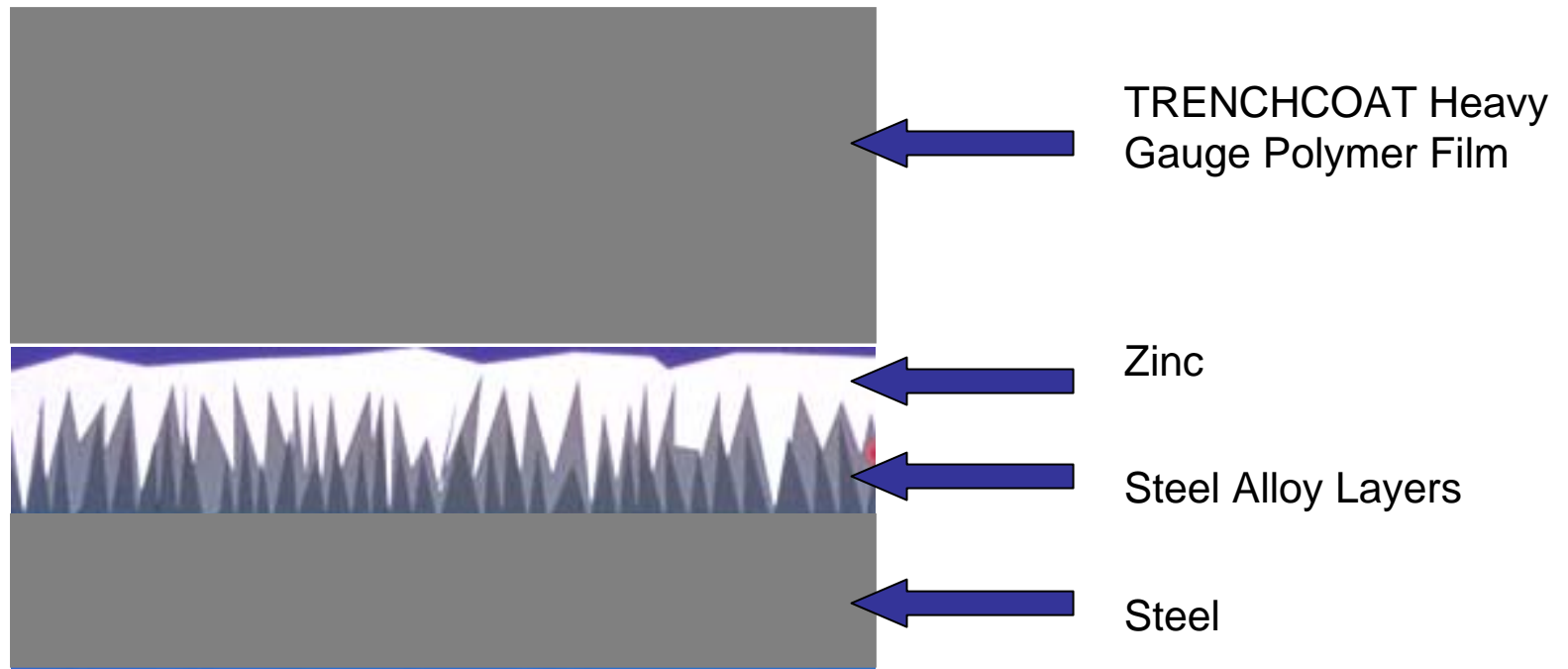
- **Adhesion**
- **Chemical resistance**
  - **Acids**
  - **Alkalies**
  - **Salts**
- **Abrasion resistance**
- **Weatherability**
- **Imperviousness**





# POLYMER

**TRENCHCOAT protective film bonds to galvanized steel both chemically and physically**







- Alkaline bath and four brush cleaning step



- Fresh water rinse



- Chemically treated coating



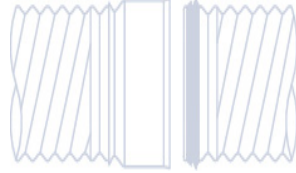
- Pre-heating of steel strip to 400°F



- Film lamination to steel strip



- Cold water quenching

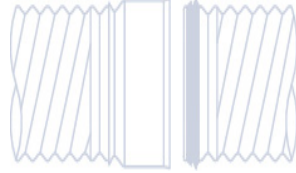


# **POLYMER**

**TRENCHCOAT coated CSP  
performance is validated by:**



- **Dow lab and field studies**
- **NCSPA studies**
- **Independent corrosion firm**
- **Fabricators**
- **State DOTs**



# Polymer – Abrasion Guidelines

Exceptional coating performance in  
Level 1 – 3 applications.

Invert treatment required for Level 4.

FHWA abrasion guidelines:

Abrasion Level	Abrasion Condition	Bed Load	Flow Velocity (fps)
Level 1	Non – Abrasive	None	Low
Level 2	Low Abrasive	Minor (sand)	< 5
Level 3	Moderate Abrasive	Moderate (sand & gravel)	5 - 15
Level 4	Severe Abrasive	Heavy (sand, gravel & rock)	> 15



# Polymer – Environmental Guidelines

## Service Life Estimate

Service Life	pH Levels	Resistivity
100 years	5 - 9	> 1500 ohm.cm
75 years	4 - 9	> 750 ohm.cm
50 years	3 - 12	> 250 ohm.cm





# POLYMER SMOOTH-COR

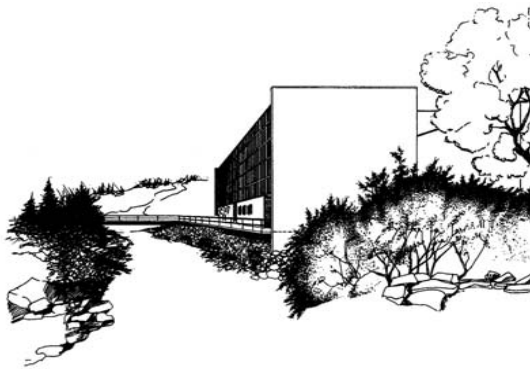
## Hydraulics

FLOW TESTING 24-INCH  
DOUBLE WALL SPIRAL RIB PIPE

March, 2003

Contech Construction Products, Inc.

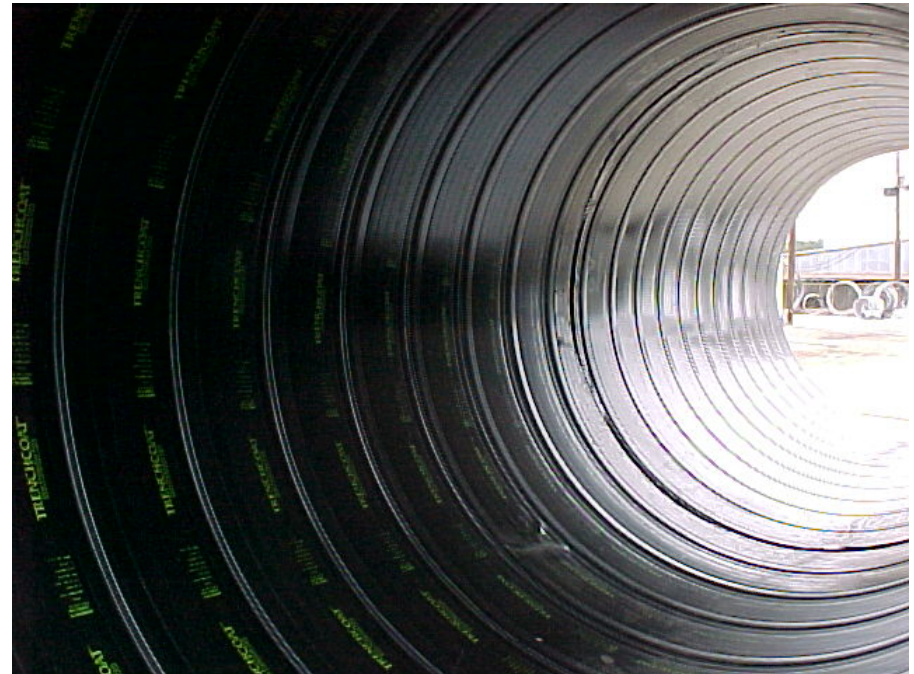
Prepared By: Blake P. Tullis, Ph.D.



UTAH WATER RESEARCH LABORATORY

Utah State University Research Foundation

Hydraulics Report No. 1332  
Project No. 03-TT507



**“n” = 0.012**



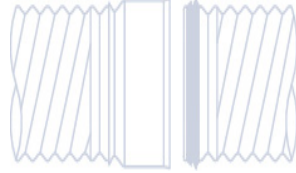


# **POLYMER SMOOTH-COR**

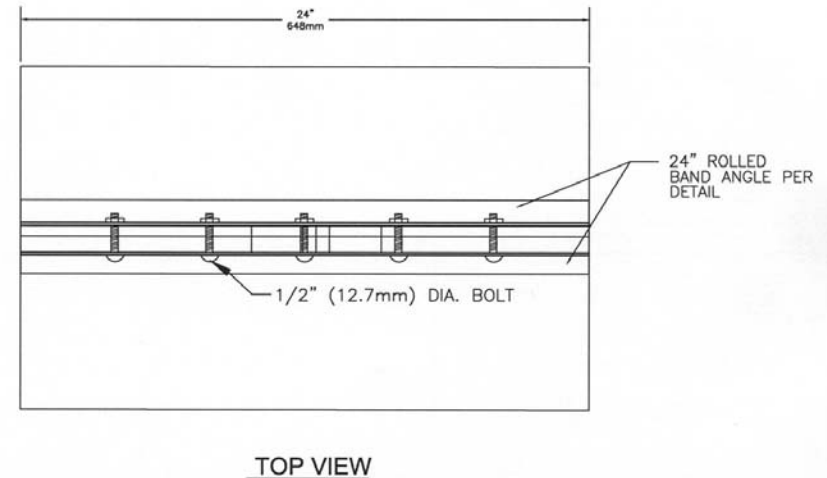
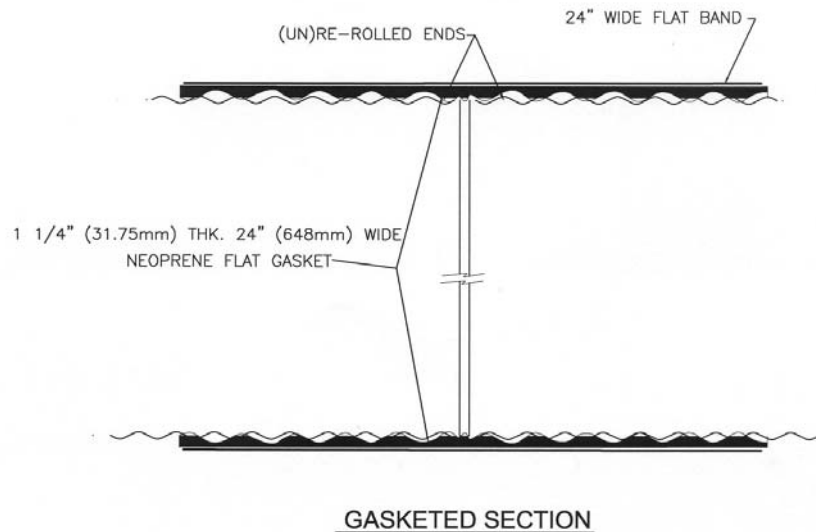
## **Hydraulics**



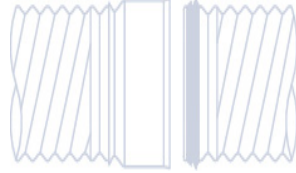
**In-line fittings reduce hydraulic losses.**



# POLYMER SMOOTH-COR Joints



**Smooth-Cor is not re-rolled. Typical joint is a flat band with 1 1/4" gasket.**



# **POLYMER SMOOTH-COR**

## **Joints**



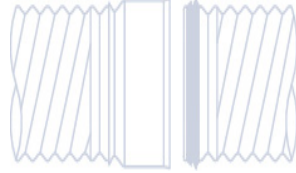




# POLYMER SMOOTH-COR Joints



Pipe is match-marked and assembled  
in field as it was manufactured.



# **POLYMER SMOOTH-COR**

## **Joints**

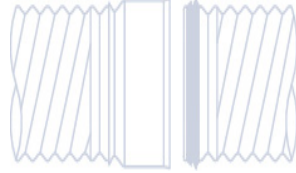


Finished joint is Soil-Tight.





# Recent Case Histories

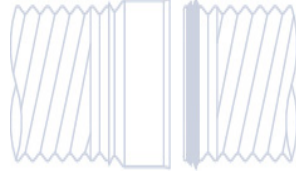


# INDOT – Indianapolis, IN



- **10,000 LF 96" Diameter**
- **Fill heights 20' – 45'**
- **Ground Water**

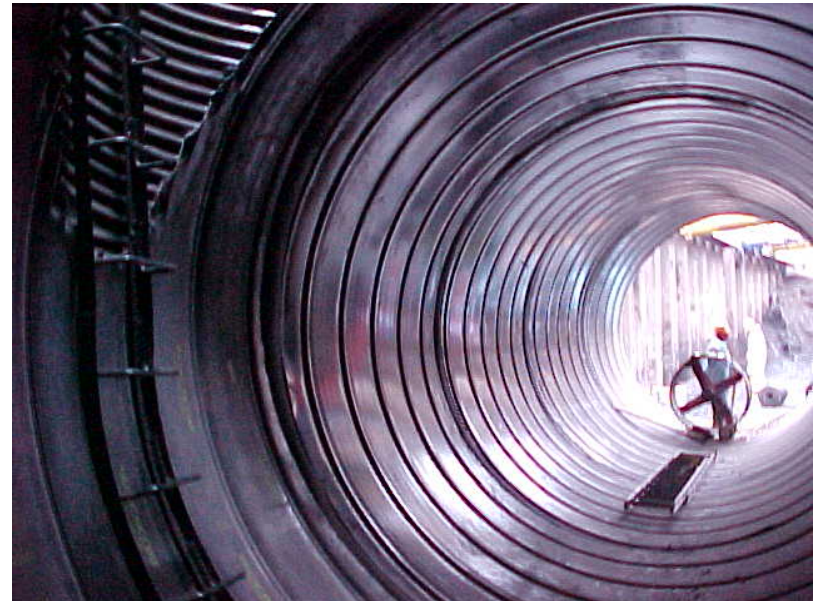




# NJDOT – Lodi, NJ



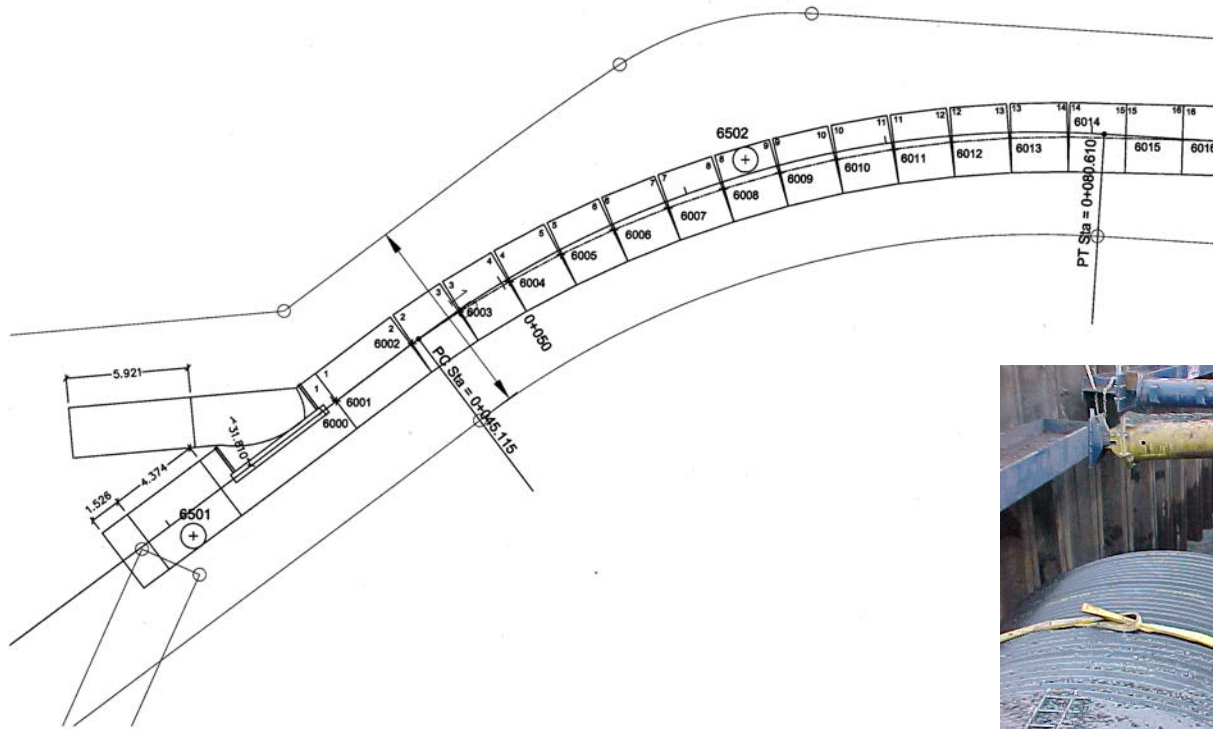
- **4,000 LF 132" Diameter**
- **1,000 LF 120" Diameter**
- **Constrained Site**
- **Integrated Manholes**







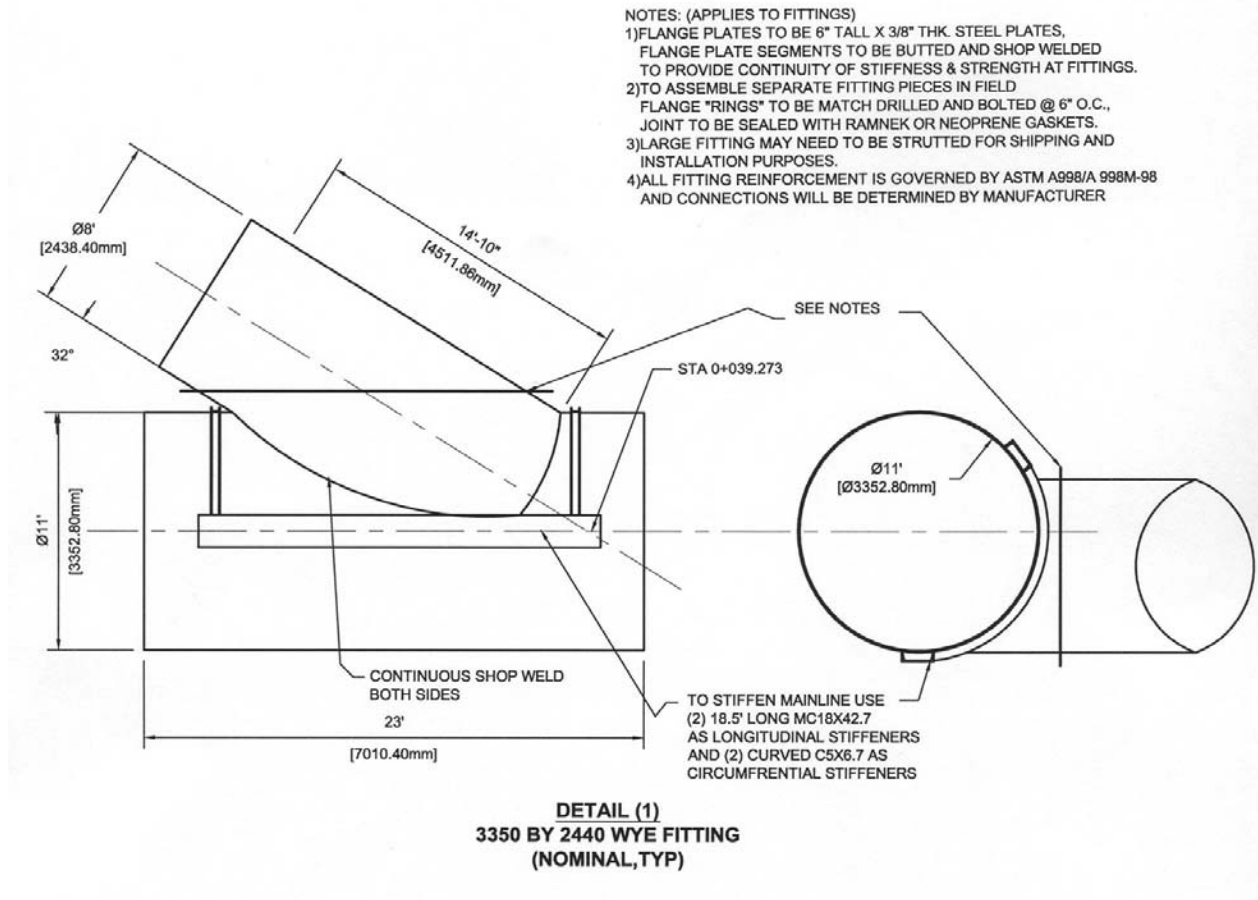
# NJDOT – Lodi, NJ



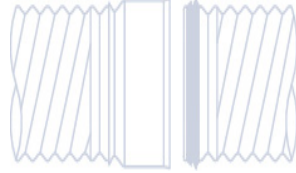
**Sweeping curves used in lieu of junction structures.**



# NJDOT – Lodi, NJ



**Custom fittings used in lieu of junction structures.**

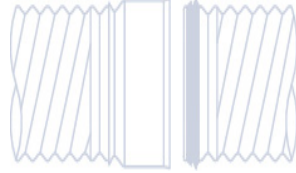


# Warner Robins AFB



- **8,500 LF 126" Diameter**
- **1,800 LF 96" Diameter**
- **Airport Loading**
- **Integrated Manholes**
- **Early completion**





# **POLYMER SMOOTH-COR**

- **Ideal for highway and airport construction**
- **Perfectly suited for large diameters & minimal slope**
- **Great for constrained sites and deep fills**
- **Custom fabrication**
- **Mobile manufacturing**



**CONTECH**  
CONSTRUCTION PRODUCTS INC.  
CONSTRUCTION PRODUCTS INC.  
**CONTECH**

The image features a 3D logo for CONTECH CONSTRUCTION PRODUCTS INC. The logo is rendered in a vibrant blue color. The word "CONTECH" is prominently displayed in large, bold, block letters. The first "C" is stylized with a sunburst or starburst effect, with rays emanating from its center. Below "CONTECH", the words "CONSTRUCTION PRODUCTS INC." are written in a smaller, all-caps, sans-serif font. The entire logo is reflected on a surface that looks like water, creating a mirror image of the text and the sunburst effect. The background is a dramatic sky with a sunset or sunrise, featuring a bright sun partially obscured by clouds, casting a warm glow over the scene.